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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of:	)	Art Group: 2176
Kudrolli *et al.*	)	Examiner: Amelia L. Rutledge
Serial Number: 10/020,909	)	
Filed: Dec. 19, 2001	)	
Entitled: Compacting an information array display to cope with two dimensional display space constraint	)	

BRIEF ON APPEAL

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

This appeal is taken from the final rejection of all claims pending in this application, claims 1-28 (*See* Appendix I).

The notice of appeal to the Board of Patent Appeals and Interferences was timely filed on Aug. 06, 2007. A final office action was issued Feb 06, 2007. The claims have been at least twice rejected.

APPEAL BRIEF

This is an appeal to the United States Patent Office Board of Patent Appeals and Interferences of Application No. 10/020,909 filed on Dec. 19, 2001.

I. Real Party in Interest

The real party in interest is the assignee of record: Kudrollis Software Inventions Pvt. Ltd., Mumbai, India.

II. Related Appeals and Interferences

There are no other related appeals or interferences.

III. Status of Claims

This appeal is taken with respect to Claims 1-28 all of which are currently pending and have been at least twice rejected. Of these, claims 1, 17, 22, and 25 are independent claims, and claims 2-16, 18-21, 23-24, and 26-28 are dependent claims. The status of all of the claims in the application is as follows:

Claim 1 (rejected).

Claims 2-8 (rejected).

Claim 9 (rejected).

Claims 10-16 (rejected).

Claim 17 (rejected).

Claims 18-21 (rejected).

Claim 22 (rejected).

Claims 23-24 (rejected).

Claim 25 (rejected).

Claims 26-28 (rejected).

The claims should be considered separately, and they do not stand or fall together.

IV. **Status of Amendments**

No amendments have been filed subsequent to the examiner's final rejection of Feb 06, 2007. All of the pending claims have been at least twice rejected.

V. **Summary of Claimed Subject Matter**

The independent claims are 1, 17, 22 and 25. References to page and paragraph numbers from the specification in this section refer to the published application 2003/0028560 which was published on February 6, 2003.

A. General Description

The Applicants' invention relates to the field of calculation of column widths and row heights of tabulated information structures such as tables and spreadsheets (hereinafter tables). In particular, the present invention discloses methods for calculating column widths and row heights such that display space wastage caused by unusually large information elements in cells is minimized and the table fits within a limited space available for displaying the table.

Generally in tables, several unusually large information elements are randomly distributed across columns and rows. Because of these unusually large elements, the widths or heights calculated for the corresponding columns or rows are also unusually large even when other elements in the column or row are much smaller.

For example, the table in FIG. 16 of the Specification illustrates the problem of space wastage caused by an unusually large information element. The 2nd cell in the 3rd row of said table contains an unusually large (compared to the other 6 cells in the row) information element. The entire row has been allocated more height to accommodate the unusually large information element, leading to the clearly visible wastage of space in the other 6 cells of the row. As a result of such wastage of display space, it becomes difficult or impossible to display the table within a limited predetermined two dimensional display space.

In view of the problems highlighted in the preceding paragraphs as well as other important factors relating to layout and display of tables, the methods of the present invention have been guided by the following three Design Principles:

(1) The table should be displayed within a predetermined two dimensional display space: In most real life situations, tables have to be displayed/ printed within limited two dimensional spaces and the luxury of unlimited space to display/ print any given table is not available. For example, a table may have to be: (i) displayed within one screen or a window within a screen or (ii) printed within one page or part of a page. In such situations, it is a problem if the table overflows beyond the available two dimensional space (i.e., a

space having predetermined height and width) and is not fully visible. Thus, the table layout methods should be designed to display the entire table within the available two dimensional display space without overflowing.

(2) The problem of display space wastage caused by unusually large information elements should be dealt with: As illustrated by the example of FIG. 16 discussed above, allocating row height or column width based on the size or display space requirement (DSR) of an unusually large information element leads to wastage of space in the entire row or column and causes tables to overflow beyond the available display space. Prior art methods generally allocate row height or column width to accommodate the largest (i.e., unusually large) information element in the column or row and no weight is given to the fact that the other information elements in the row or column are of smaller size and, thus, most of the extra space allocated will be wasted. Thus, there is need for a table layout method for allocating row height and column width which is based not just on the size of the unusually large element but, in addition, takes into account the size of other information elements in the table.

(3) The integrity of the table should be preserved: Generally, in comparative tables, spreadsheets and other such tables the integrity of the table gets destroyed if either: (i) one or more cells are deleted/ removed from the table, or (ii) one or more cells are moved to a different row or column - i.e., the relative position of the cell in the table is changed. Thus, the table layout methods should not rely on such methods which destroy the integrity of the table.

All the claims of the present invention are consistent with Design Principle 1 (mentioned above) and, in fact, all the independent claims 1, 17, 22, & 25 specify this. All the claims are also consistent with Design Principle 3 since no claim mentions deleting or removing or moving any cell of the table. Design Principle 2 is actualized in the three independently claimed inventive methods of the present invention which are listed and explained below. Please refer to the, "Mapping of the Independent Claims to the Specification" section hereafter to see where each claim element is disclosed in the Specification.

The three independently claimed inventive methods of the present invention are listed and explained below:

(1) Moderating Method:

The Method:

Moderating the Display Space Requirement (DSR) value of at least one element to determine its moderated display space requirement (ModDSR) value, wherein said moderating step comprises:

(i) selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds; and

(ii) reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds (See Claims 1, 17, & 25).

How It Works:

The Display Space Requirement (DSR) value is a measure of the space required to display an information element - i.e., the DSR value measures the size of an information element (See Specification, p. 3, par. 0054-p. 4, par. 0060).

The Moderating Method (listed above) has two steps: (i) selecting an element and (ii) reducing the DSR of the selected element to determine its moderated DSR (ModDSR) value. The reduction (i.e., adjustment) in the DSR value of the selected element is based on the difference in size (DSR) of the selected element versus other elements in the column or row. Thus, if the other elements in the column or row are much smaller than the selected element, then the DSR value of the selected element will be reduced (adjusted) more. Thus unlike prior art methods, which allocate row height or column width based on the size - i.e., DSR value - of the largest element in the row or column, the present invention allocates row height or column width based on the moderated (i.e., reduced or adjusted) DSR value which saves space in the row or column. Since most tables have several unusually large elements in different rows and columns, the present invention substantially reduces wastage of space and enables the table to be fitted in a limited two-dimensional display space. (See Specification, p. 4, par. 0076; p. 16, par. 0367-p. 17, par. 0404).

(2) Measuring the Lopsidedness Method:

The Method:

Measuring the lopsidedness of distribution of larger elements across columns and across rows and depending upon whether the lopsidedness is greater across columns or across rows, allocating column widths or row heights, respectively, as a first allocation based on ModDSR values or on values obtained by using the ModDSR values and thereafter in a second allocation allocating row heights or column widths, respectively (See Claim17, steps (c) & (d)).

How It Works:

Measuring the Lopsidedness Method (listed above) is one more feature in claim 17, which is in addition to the method for determining moderated display space requirement (ModDSR) values. The method for determining ModDSR values has already been explained above (See Moderating Method).

Space may be allocated to cells by: (i) first allocating column widths followed by second allocation of row heights or (ii) first allocating row heights followed by second allocation of column widths. Lopsidedness of distribution of elements of the information array is an important factor based on which first allocation of column widths or row heights is decided. The Measuring the Lopsidedness Method determines whether the larger information elements are: (i) largely concentrated in one or a few columns (i.e., distribution is lopsided across columns) or (ii) are largely concentrated in one or a few rows (i.e., distribution is lopsided across rows). If the distribution is lopsided across columns, column widths are allocated first and if the distribution is lopsided across rows, row heights are allocated first. (See Specification, p.18, par. 0423-p. 20, par. 0483).

(3) Checking Adequate Space Method:

The Method:

Checking whether the predetermined two dimensional display space is adequate for displaying the information array elements in a matrix format and, if found to be inadequate, executing the following steps:

(i) allocating column widths or row heights in proportion to the total of the display space requirement values of the elements corresponding to the cells arranged into each corresponding column or row, respectively, such that the total width of all the columns or the total height of all the rows does not exceed the width and height, respectively, of the predetermined two dimensional display space; and

(ii) within each column or row, allocating height or width, respectively, to cells in proportion to the DSR values of the elements corresponding to the cells within each such column or row, respectively, such that the total height or width of all the cells does not exceed the height or width, respectively, of the predetermined two dimensional display space (See Claim 22).

How It Works:

The Checking Adequate Space Method (listed above) is used in situations where the available two dimensional space for displaying the table space is very small and inadequate to display the table in Matrix format (See Specification, p. 3, par. 0046-0047; p. 4, par. 0073-p. 5, par. 0079). In this method, the minimum

space required for displaying the elements of the table in the matrix format is determined, and this is compared with the predetermined two dimensional space available for displaying the table. If the predetermined two dimensional space available is less than the minimum space required for displaying the table in the matrix format, then the table will be displayed using Tall/ Wall format (See Specification, p. 3, par. 0048-0051; p. 5, par. 0080-p. 5, par. 0086). In Tall/ Wall Format, width/ height is allocated first to the columns/ rows in proportion to the total DSR of the elements in each column/ row, respectively. Within each column/ row, height/ width is allocated to individual cells in proportion to the DSR values of the corresponding information elements. In this method, alignment of cells is maintained along any one of the two dimensions and not necessarily along the other dimension (See FIGs. 21 & 22).

The three independently claimed inventive methods of the present invention listed and described above are hereinafter referred to as: (i) Moderating Method, (ii) Measuring the Lopsidedness Method, and (iii) Checking Adequate Space Method. Further, the selecting sub-step and reducing sub-step of Moderating Method are hereafter referred to as "Selecting Sub-step of Moderating Method" and "Reducing Sub-step of Moderating Method". Whenever these terms are encountered in this Appeal Brief, please refer to the explanations of these methods in the preceding paragraphs.

FIGS. 17-22 of the Specification show the table of FIG. 16 displayed within predetermined two dimensional display spaces of various shapes and sizes using the display space allocation methods of the present invention. FIGS. 17-22

also illustrate an important aspect of the present invention, namely: the integrity of the table is preserved even when it is displayed in the compacted two dimensional display spaces because no cell is deleted/removed from the table and no cell is moved to a different row or column.

B. Mapping of the Independent Claims to the Specification

The independent claims are 1, 17, 22 and 25. References to page and paragraph numbers from the specification in this section refer to the published application 2003/0028560 which was published on February 6, 2003.

Claim 1. A computer executable method for displaying elements of an information array within a predetermined two dimensional display space, **(p. 2, par. 0029)** wherein the predetermined two dimensional display space is divided into cells formed at intersections of columns and rows, the elements of the information array have corresponding cells for display, and at least two of said elements include text, **(p.3, par. 0047, 0050-0052)** said method comprising the steps of:

(a) determining display space requirement (DSR) for displaying the elements; **(p. 2, par. 0030; p. 14, par. 0302-0306)**

(b) moderating the DSR value of at least one element to determine its moderated display space requirement (ModDSR) value, **(p. 2, par. 0031, lines 1-3)** wherein said moderating step comprises:

(i) selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds; **(p. 4, par. 0076)** and

(ii) reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds; **(p. 2, par. 0031; p. 16, par. 0367-p. 17, par. 0404)**

(c) allocating column widths and row heights, based on the ModDSR values or on values obtained by using the ModDSR values, such that the total width of all the columns and the total height of all the rows do not exceed the width and height, respectively, of the predetermined two dimensional display space; **(p. 2, par. 0034, lines 4-7; p. 2, par. 29; p. 19, par. 0453-p. 21, par. 0488)** and

(d) displaying the elements in the space allocated to the corresponding cells. **(p. 3, par. 0039)**

Claim 17. A computer executable method for displaying elements of an information array within a predetermined two dimensional display space, **(p. 2, par. 0029)** wherein the predetermined two dimensional display space is divided into cells formed at intersections of columns and rows, the elements of the information array have corresponding cells for display, and at least two of said

elements include text, **(p.3, par. 0047, 0050-0052)** said method comprising the steps of:

(a) determining display space requirement (DSR) for displaying the elements; **(p. 2, par. 0030; p. 14, par. 0302-0306)**

(b) determining moderated display space requirement (ModDSR) values for elements corresponding to each column or to each row; **(p. 2, par. 0031; p. 16, par. 0367-p. 17, par. 0404)**

(c) measuring the lopsidedness of distribution of larger elements across columns and across rows; **(p. 2, par. 0033; p. 18, par. 0423-p. 19, par. 0452)**

(d) depending upon whether the lopsidedness is greater across columns or across rows, allocating column widths or row heights, respectively, as a first allocation based on ModDSR values or on values obtained by using the ModDSR values and thereafter in a second allocation allocating row heights or column widths, respectively, such that the total width of all the columns and the total height of all the rows do not exceed the width and height, respectively, of the predetermined two dimensional display space; **(p. 2, par. 0034; p. 2, par. 29; p. 19, par. 0453-p. 21, par. 0488)** and

(e) displaying the elements in the space allocated to the corresponding cells. **(p. 3, par. 0039)**

Claim 22. A computer executable method for displaying elements of an information array within a predetermined two dimensional display space, **(p. 2, par. 0029)** wherein, the elements of the information array have corresponding

cells arranged into columns or rows for displaying in the predetermined two dimensional display space and at least two of said elements include text, **(p.3, par. 0048-0052)** said method comprising the steps of:

(a) determining display space requirements (DSR) for displaying the elements; **(p. 2, par. 0030; p. 14, par. 0302-0306)**

(b) checking whether the predetermined two dimensional display space is adequate for displaying the information array elements in a matrix format and, if found to be inadequate, executing the following steps; **(p. 3, par. 0035; p. 4, par. 0073-p. 5, par. 0086; p. 13, par. 0271-p. 15, par. 0357)**

(c) allocating column widths or row heights in proportion to the total of the DSR values of the elements corresponding to the cells arranged into each corresponding column or row, respectively, such that the total width of all the columns or the total height of all the rows does not exceed the width and height, respectively, of the predetermined two dimensional display space; **(p. 3, par. 0036; p. 2, par. 29; p. 21, par. 0491, lines 1-2; p. 21, par. 0493-p. 22, par. 0526; p. 22, par. 0553, lines 1-2; p. 23, par. 0555-par. 0572)**

(d) within each column or row, allocating height or width, respectively, to cells in proportion to the DSR values of the elements corresponding to the cells within each such column or row, respectively, such that the total height or width of all the cells does not exceed the height or width, respectively, of the predetermined two dimensional display space; **(p. 3, par. 0037; p. 2, par. 29; p. 21, par. 0491, lines 3-4; p. 22, par. 0528-par. 0530; p. 22, par. 0553, lines 3-4; p. 23, par. 0574-par. 0576)** and

(e) displaying the elements in the space allocated to the corresponding cells. **(p. 3, par. 0039)**

Claim 25. A computer system including a computer and programs for displaying elements of an information array within a predetermined two dimensional display space, **(p. 2, par. 0029)** wherein the predetermined two dimensional display space is divided into cells formed at intersections of columns and rows, the elements of the information array have corresponding cells for display, and at least two of said elements include text, **(p.3, par. 0047, 0050-0052)** said computer system comprising of:

(a) means for determining display space requirement (DSR) for displaying the elements; **(p. 2, par. 0030; p. 14, par. 0302-0306)**

(b) means for moderating the DSR value of at least one element to determine its moderated display space requirement (ModDSR) value, **(p. 2, par. 0031, lines 1-3)** wherein said moderating means comprises:

(i) means for selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds; **(p. 4, par. 0076)** and

(ii) means for reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds; **(p. 2, par. 0031; p. 16, par. 0367-p. 17, par. 0404)**

(c) means for allocating column widths and row heights, based on the ModDSR values or on values obtained by using the ModDSR values, such that the total width of all the columns and the total height of all the rows do not exceed the width and height, respectively, of the predetermined two dimensional display space; **(p. 2, par. 0034, lines 4-7; p. 2, par. 29; p. 19, par. 0453-p. 21, par. 0488)** and

(d) means for displaying the elements in the space allocated to the corresponding cells. **(p. 3, par. 0039)**

VI. Grounds of Rejection to be Reviewed on Appeal

Claims 17-24 stand rejected under 35 U.S.C. Sec. 102(e) as being anticipated by Harada et al. (hereafter "Harada"), U.S. Patent No. 6,246,442, issued June 2001. Claims 1-16 & 25-28 stand rejected under 35 U.S.C. Sec. 103(a) as being unpatentable over Harada in view of Shin et al. (hereafter "Shin"), U.S. Patent No. 5,808,914, issued September 1998.

VII. Argument

I. History of the Prosecution

During prosecution, claims 1, 9, 17, 22, & 25 were amended in response to Examiner's objections. No new claim was added and no claim was canceled.

Dec 19, 2001 Appln. No. 10/020,909 filed with the USPTO. Total claims: 28; Independent Claims: 1, 17, 22, & 25

Apr 29, 2005	Examiner's First Office Action. All independent claims rejected under 35 U.S.C. Sec. 103(a) in view of Wallack (U.S. Patent No. 6,055,550) and Kanevsky (U.S. Patent No. 6,300,947).
Aug 27, 2005	Applicant's Reply to First Office Action dated: Apr 29, 2005.
Oct 12, 2005	Examiner's 2nd Office Action. All independent claims rejected under 35 U.S.C. Sec. 103(a) in view of Wallack and Kanevsky. Action made final.
Mar 09, 2006	Applicant's Reply to 2nd Office Action dated: Oct 12, 2005.
May 30, 2006	Examiner's 3rd Office Action. All independent claims rejected under 35 U.S.C. Sec. 102 in view of Harada (U.S. Patent No. 6,246,442).
Oct 03, 2006	Applicant's Reply to 3rd Office Action dated: May 30, 2006.
Oct 25, 2006	Telephonic Interview between the Examiner and the Applicant's Representatives. Examiner suggested that Applicants file a supplemental amendment with the desired claim amendment.
Nov 13, 2006	Applicant's Supplemental Reply to 3rd Office Action dated: May 30, 2006.
Feb 06, 2007	Examiner's 4th Office Action. All claims rejected. Independent claims 17 & 22 rejected under 35 U.S.C. Sec. 102 in view of Harada (U.S. Patent No. 6,246,442).

Independent claims 1 & 25 rejected under 35 U.S.C. Sec. 103 in view of Harada and Shin (U.S. Patent No. 5,808,914).

II. Issues:

(A) Whether claims 17-24 are anticipated by the Harada reference.

(B) Whether claims 1-16 & 25-28 are unpatentable over the Harada reference in view of the Shin reference.

III. Introduction:

A. Description of the Harada Reference (U.S. Patent No. 6,246,442)

The Harada reference is U.S. Patent No. 6,246,442, dated June 12, 2001 titled "Apparatus for displaying information arranged in cells". Harada is directed to displaying a broadcasting program guide table, in which program guide elements of a broadcasting program guide are arranged in cells according to a detail degree input by a user for each broadcasting program guide (See Harada Abstract; Col. 6, l.14-65).

Harada teaches that based on the detail degree indicated by user (e.g., first level, second level, or third level) less or more program guide elements are selected for display in cells. Also based on the detail degree the no of cells and layout of cells in the table are changed. Harada also teaches that based on the program guide arrangement information the attributes (e.g., movie genre, start time, or channel) for the X-axis and Y-axis of the table layout are selected (See Harada, col. 15, l. 26-col. 16, l. 1-18; FIGS. 7-10). Thus, as per Harada, the level

of detail of information, what information is displayed, the number and layout of cells in the table are not fixed and change based on user input.

Harada teaches deleting or moving cells to other rows/ columns based on user input. This can destroy the integrity of the table and goes against the teachings of the present invention.

In addition, Harada fails to teach the 3 independently claimed inventive methods of the present invention, namely:

(1) Moderating Method:

Moderating the Display Space Requirement (DSR) value of at least one element to determine its moderated display space requirement (ModDSR) value, wherein said moderating step comprises:

(i) selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds; and

(ii) reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds (See Claims 1, 17, & 25).

(2) Measuring the Lopsidedness Method:

Measuring the lopsidedness of distribution of larger elements across columns and across rows and depending upon whether the lopsidedness is greater across columns or across rows, allocating column widths or row heights,

respectively, as a first allocation based on ModDSR values or on values obtained by using the ModDSR values and thereafter in a second allocation allocating row heights or column widths, respectively (See Claim17, steps (c) & (d)).

(3) Checking Adequate Space Method:

Checking whether the predetermined two dimensional display space is adequate for displaying the information array elements in a matrix format and, if found to be inadequate, executing the following steps:

(i) allocating column widths or row heights in proportion to the total of the display space requirement values of the elements corresponding to the cells arranged into each corresponding column or row, respectively, such that the total width of all the columns or the total height of all the rows does not exceed the width and height, respectively, of the predetermined two dimensional display space; and

(ii) within each column or row, allocating height or width, respectively, to cells in proportion to the DSR values of the elements corresponding to the cells within each such column or row, respectively, such that the total height or width of all the cells does not exceed the height or width, respectively, of the predetermined two dimensional display space (See Claim 22).

In the sub-section "General Description" under the section "Summary of Claimed Subject Matter" shown above, all these 3 methods of the invention are explained in greater detail, with citations to our Specification.

B. Description of the Shin Reference (U.S. Patent No. 5,808,914)

The Shin reference is U.S. Patent No. 5,808,914, dated September 15, 1998 titled "Table allocating apparatus and method". Shin discloses a table allocating apparatus and method which uses linear programming for producing an optimum layout of a table having rows and columns (See Shin Abstract).

In Shin, column widths and row heights are expressed in linear equations. Shin teaches using a section constraint condition, linear equations, linear programming, automatic line folding and simplex method to solve the linear programming problem for producing an optimal layout of a table (See Shin, Abstract; col. 12, l. 60-col. 13, l. 2; FIG. 8; col. 20, l. 29-32)

However, Shin fails to teach the Moderating Method of the present invention, namely:

Moderating Method:

Moderating the Display Space Requirement (DSR) value of at least one element to determine its moderated display space requirement (ModDSR) value, wherein said moderating step comprises:

(i) selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds; and

(ii) reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements

corresponding to the column or row to which said element corresponds (See Claims 1, 17, & 25).

In the sub-section "General Description" under the section "Summary of Claimed Subject Matter" discussed above, the Moderating Method is explained in greater detail, with citations to our Specification.

IV. The Legal Standard for Anticipation

"A person shall be entitled to a patent unless --- the invention was ... (b) patented or described in a printed publication in this or a foreign country ...." 35 U.S.C. §102(b). Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference or embodied in a single prior art device or practice. In re Paulson, 30 F.3d 1475, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994); In re Spada, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990). The corollary of the rule is that absence from the reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 230 USPQ2d 81 (Fed. Cir. 1986). To anticipate a patent claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently. Atlas Powder Co. v. IRECO Inc., 190 F.3d 1342, 51 USPQ2d 1943 (Fed. Cir. 1999). The reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it. *See*, In re Spada at 708.

V. The Legal Standard for Obviousness

The PTO has the burden under 35 U.S.C. Sec. 103(a) to establish a *prima facie* case of obviousness. In re Thrift, 298 F.3d 1357, 1363, 63 U.S.P.Q.2d 2002, 2006 (Fed. Cir. 2002). In the absence of a proper *prima facie* case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent. In re Brouwer, 77 F.3d 422, 425, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1996) ("when the references cited by the examiner fail to establish a *prima facie* case of obviousness, the rejection is improper and will be overturned").

Recently, in order to determine when two or more references may be combined, in KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007), the U.S. Supreme Court, while rejecting a rigid application of the teaching, suggestion, or motivation test, nevertheless held that "some articulated reasoning with some rational underpinning" was required to combine two or more references. Id. at 1741. In addition, the U.S. Supreme Court cautioned that "[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements." Id. (citing In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006).

If an independent claim is found to be non-obvious under 35 U.S.C. Sec. 103, then any claim depending therefrom is also non-obvious. In re Fine, 837 F.2d 1071, 1076, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

VI. Claims 17-24 are novel over the Harada reference, and claims 1-16 and 25-28 are not obvious over the Harada reference in view of the Shin reference.

Harada lays out cells in tables based on the level of detail specified by user and cell layout restrictive conditions (see "Description of the Harada Reference" above). Shin lays out the cells using linear programming and the simplex method.

The methods of Harada and Shin are different from the methods of the present invention. The methods of the present invention deal with the problem causing unusually large elements thereby minimizing wastage of space and enabling the table to be displayed within the available two dimensional display space.

This is explained in detail below with reference to the Examiner's rejections in the 4th Office Action dated Feb 06, 2007 (hereafter "4th Office Action").

Claims 17-24 are novel over the Harada reference.

In the 4th Office Action, the Examiner rejected independent claims 17 & 22 under 35 U.S.C. Sec. 102 in view of Harada.

While rejecting independent claim 17, Examiner has stated, "Harada teaches moderating the DSR of an element to determine the moderated DSR value by reducing the value of the element" (4th Office Action, Page 2, 2nd last line - Page 3, 1st line). Examiner has erred in saying this because in Page 7, line

11 of said Office Action, Examiner has stated the opposite, namely, "Harada does not explicitly teach moderating the DSR value of at least one element to determine its moderated display space requirement (ModDSR) value". In other words, Examiner has accepted that Harada does not teach the Moderating Method of the present invention. Thus, Examiner has contradicted herself and this rejection of claim 17 is wrong. Since Harada does not teach the Moderating Method, this claim 17 is new and patentable.

In addition, in page 3, 2nd paragraph of the 4th Office Action Examiner has stated, "Harada teaches determining the optimum distribution of elements across columns and across rows, i.e., the X and Y axis; and allocating cell widths based on the X or Y axis restrictive condition, i.e., row heights or column widths, respectively (Col. 61, l. 32-Col. 62, l. 64), compare to measuring the lopsidedness of distribution of larger elements across columns and across rows; and correspondingly allocating column widths or row heights." Even if Harada teaches "optimum distribution of elements across columns and across rows", it does not teach measuring the lopsidedness of distribution of larger elements across columns and across rows, and it does not teach the conditional allocation of column widths or row heights as a first allocation (See Claim 17, steps (c) & (d); Specification, p.18, par. 0423-p. 20, par. 0483). Also, Harada does not disclose an "X or Y axis restrictive condition" (See Harada, Col. 61, l. 32-Col. 62, l. 64), and the Examiner is mistaken in claiming that Harada does. The only restrictive condition disclosed by Harada is as follows:

(a) the ratio of longitudinal side length (cell height) to lateral side length (width) should be approximately equal to 1;

(b) cell character width should be slightly greater than or equal to one group of program elements actually arranged in each cell; and

(c) the number of cells arranged in a table is as large as possible. (See Harada, col. 37, l. 62- col. 38, l. 8).

Clearly, Harada's "restrictive condition" is different from the method of measuring lopsidedness of distribution large elements in the table. Thus, the Measuring the Lopsidedness Method of the present invention is new, and therefore, claim 17 is patentable.

While rejecting claim 22, Examiner has stated, "Harada teaches moderating the DSR of an element to determine the moderated DSR value..." (See 4th Office Action, Page 4, last 2 lines). The Examiner is perhaps confused and has not dealt with the specific steps of the present invention (See Claim 22). In fact, the Examiner has expressed no objection at all relating to the Checking Adequate Space Method of this claim which is:

Checking whether the predetermined two dimensional display space is adequate for displaying the information array elements in a matrix format and, if found to be inadequate, executing the following steps:

(i) allocating column widths or row heights in proportion to the total of the display space requirement values of the elements corresponding to the cells arranged into each corresponding column or row, respectively, such that the

total width of all the columns or the total height of all the rows does not exceed the width and height, respectively, of the predetermined two dimensional display space; and

(ii) within each column or row, allocating height or width, respectively, to cells in proportion to the DSR values of the elements corresponding to the cells within each such column or row, respectively, such that the total height or width of all the cells does not exceed the height or width, respectively, of the predetermined two dimensional display space (See Claim 22).

The Checking Adequate Space Method of this claim 22 is new and therefore, this claim is patentable.

Claims 1-16 and 25-28 are not obvious over the Harada reference in view of the Shin reference.

In the 4th Office Action dated Feb 06, 2007, the Examiner rejected independent claims 1 & 25 under 35 U.S.C. Sec. 103 in view of Harada and Shin.

With regard to independent claim 1, the Examiner has accepted that "Harada does not explicitly teach moderating the DSR value of at least one element to determine its moderated display space requirement (ModDSR) value ..." (See 4th Office Action, page 7, 2nd paragraph). In other words, the moderating step (b) of claim 1 and similar claims is not disclosed by Harada.

The Examiner states that Harada suggests these limitations since "Harada teaches determining the optimum size of a cell and adjusting the size of adjacent

cells (Fig. 56; Col. 56, l. 46-Col. 57, l. 29) as well as reducing the font size of text elements to an optimum size". Harada has specified that "determining the optimum size of a cell and adjusting the size of adjacent cells" is "on condition that the particular cell layout restrictive conditions are satisfied and an information volume of each particular cell is equal to or slightly larger than the maximum information volume" (See Harada Col. 56, l.63-Col. 57, l. 2). The restrictive conditions disclosed by Harada are as follows:

(a) the ratio of longitudinal side length (cell height) to lateral side length (width) should be approximately equal to 1;

(b) cell character width should be slightly greater than or equal to one group of program elements actually arranged in each cell; and

(c) the number of cells arranged in a table is as large as possible. (See Harada, col. 37, l. 62- col. 38, l. 8).

The "restrictive conditions" for "determining the optimum size of a cell and adjusting the size of adjacent cells" specified by Harada do not disclose the Moderating method of the present invention. In particular, Harada does not disclose:

(i) selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds; and

(ii) reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements

corresponding to the column or row to which said element corresponds (See Claims 1, 17, & 25).

After admitting that Harada does not teach the moderating step (b) of claim 1 and similar claims, the Examiner relies on Shin and claims that Shin discloses "moderating the DSR value of at least one element to determine its moderated display space requirement (ModDSR) value ..." (See 4th Office Action, page 8, 1st paragraph). In Shin, the Examiner has cited to (Fig. 8, 9, col. 10, l. 37-col. 11, l. 32), (col. 5, l. 50-col. 6, l. 32), (col. 19, l. 45-col. 23, l. 40; col. 26, l.6-22; col. 38, l. 37-54; col. 45, l. 30-50; claims 1 and 10), (Abstract), and (col. 6, 1. 46-64).

The portions of Shin listed above disclose a table allocating apparatus and method which uses linear programming for producing an optimum layout of a table having rows and columns. Shin discloses linear equations, a section constraint condition, automatic line folding, simplex table, simplex method, proper row height, proper column width, connector holding means and layout evaluation means. Column widths and row heights are expressed in linear equations which are used to produce optimal layout of a table.

The wordings of Examiner's arguments in lines 1-9 on page 8 of the 4th Office Action are taken from the claims of the present invention but give the wrong impression that it is Shin who has disclosed all these details.

In lines 10-15 on page 8 of the 4th Office Action, the Examiner has provided specific arguments regarding how Shin's teachings disclose the Moderating method of the present invention, as follows: "Specifically, Shin

teaches applying a linear equation and a section constraint condition for setting the height and width of a table cell, row, and column (Abstract); effectively reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds.". The "section constraint conditions" disclosed by Shin are "line folding characteristics series and the box height" (See Shin, col. 13, l. 29-31). The Examiner's allegation that, applying a linear equation and the section constraint conditions of line folding and box height for setting the height and width of a table cell, row, and column, is equivalent to "reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds" is thoroughly mistaken. Shin's method of setting the height and width of a table cell, row, and column based on section constraint conditions of line folding and box height are different from the present invention's method of reducing the DSR value of the selected element subject to the condition that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row.

Also, Shin does not disclose the sub-step of, selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds (See claim 1, step (b)).

As explained above, neither Harada nor Shin either individually or combined teach the Moderating Method of claim 1 and other similar claims. Thus, claim 1 is not obvious and the Examiner is mistaken in rejecting claim 1.

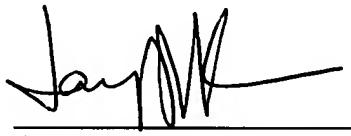
Claim 25 reflects the computer system used for implementing the method as claimed in claim 1. Thus, independent claim 25 is also patentable.

VII. **Conclusion**

Since independent claims 1, 17, 22, & 25 are patentable, so are all the other claims which depend from them.

The Board is respectfully requested to reverse the Examiner's rejection of patent and to issue orders/directions to place the case in condition for allowance at their earliest convenience.

Respectfully submitted



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Jay P. Kesan (Reg. No. 37,488)
Attorney of Record

APPENDIX I. Claims on Appeal

Claims on Appeal

Claim 1. A computer executable method for displaying elements of an information array within a predetermined two dimensional display space, wherein the predetermined two dimensional display space is divided into cells formed at intersections of columns and rows, the elements of the information array have corresponding cells for display, and at least two of said elements include text, said method comprising the steps of:

(a) determining display space requirement (DSR) for displaying the elements;

(b) moderating the DSR value of at least one element to determine its moderated display space requirement (ModDSR) value, wherein said moderating step comprises:

(i) selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds; and

(ii) reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds;

(c) allocating column widths and row heights, based on the ModDSR values or on values obtained by using the ModDSR values, such that the total width of all the columns and the total height of all the rows do not exceed the

width and height, respectively, of the predetermined two dimensional display space; and

(d) displaying the elements in the space allocated to the corresponding cells.

Claim 2. The method of claim 1 wherein in step (a) the DSR is determined for any text element using any one of the following steps:

(a) measuring text using a uniform font size;

(b) measuring text using a uniform font size which is also the permitted minimum font size;

(c) measuring text using a uniform font size for each group of elements required to be displayed using a common font size; or

(d) counting the number of text characters.

Claim 3. The method of claim 1 wherein in step (a) the DSR of text elements is determined after abbreviating the text.

Claim 4. The method of claim 1 wherein in step (b) the value representative of the DSRs of the elements corresponding to the column or row comprises any one of:

(a) average of the DSR values of the elements corresponding to the column or row, respectively;

(b) average of the DSR values of the elements corresponding to the column or row, respectively, excluding one or more of extremely large DSR values or extremely small DSR values;

(c) median of the DSR values of the elements corresponding to the column or row, respectively; or

(d) any representative value derived from the DSR values of one or more elements corresponding to the column or row, respectively.

Claim 5. The method of claim 1 wherein in step (b) the amount of reduction also depends on a measure of the space wastage which is inherent to a matrix format display.

Claim 6. The method of claim 1 wherein in step (c) the highest of said values corresponding to each column or to each row are used as a basis for allocating column widths or row heights, respectively.

Claim 7. The method of claim 1 wherein allocating step (c) includes:

(a) measuring the lopsidedness of distribution of larger elements across columns and across rows; and

(b) depending upon whether the lopsidedness is greater across columns or across rows, allocating column widths or row heights, respectively, as a first allocation and thereafter in a second allocation allocating row heights or column widths, respectively.

Claim 8. The method of claim 1 wherein in step (c) said values obtained by using the ModDSR values depend on a measure of relative lopsidedness across columns and across rows.

Claim 9. The method of claim 1 further comprising any one of:

(a) selecting the largest possible font size, from within a permitted font size range, for accommodating each element within the display space allocated to the corresponding cell;

(b) selecting the largest possible uniform font size, from within a permitted font size range, for accommodating the elements within the predetermined two dimensional display space; or

(c) selecting the largest possible set of multiple uniform font sizes, from within a permitted font size range, for accommodating the elements within the predetermined two dimensional display space with font size variations based on relative font size differences indicated in a source file.

Claim 10. The method of claim 9 wherein selecting the largest possible font size is supported by at least one of the following steps:

(a) abbreviating text;

(b) reducing internal leading space between lines of text; or

(c) reducing image size.

Claim 11. The method of claim 1 wherein said predetermined two dimensional display space is determined by the system by calculating the minimum space required to display the information array elements in matrix format.

Claim 12. The method of claim 11 wherein said calculating step is executed with regard to user's preferences relating to at least one of:

(a) permitted font size range;

(b) acceptable extent of text abbreviation; or

(c) internal leading space reduction option.

Claim 13. The method of claim 1 wherein one or more elements of the information array include images, in addition to or instead of text strings, and the images are reduced in size to reduce their DSR.

Claim 14. The method of claim 13 wherein, while reducing the images, the proportion of reduction is less for a smaller image and more for a larger image.

Claim 15. The method of claim 1 wherein at least one cell is a joined cell formed by joining contiguous cells in a column or in a row.

Claim 16. The method of claim 1 wherein the displaying step (d) includes printing.

Claim 17. A computer executable method for displaying elements of an information array within a predetermined two dimensional display space, wherein the predetermined two dimensional display space is divided into cells formed at intersections of columns and rows, the elements of the information array have corresponding cells for display, and at least two of said elements include text, said method comprising the steps of:

(a) determining display space requirement (DSR) for displaying the elements;

(b) determining moderated display space requirement (ModDSR) values for elements corresponding to each column or to each row;

(c) measuring the lopsidedness of distribution of larger elements across columns and across rows;

(d) depending upon whether the lopsidedness is greater across columns or across rows, allocating column widths or row heights, respectively, as a first allocation based on ModDSR values or on values obtained by using the ModDSR values and thereafter in a second allocation allocating row heights or column widths, respectively, such that the total width of all the columns and the total height of all the rows do not exceed the width and height, respectively, of the predetermined two dimensional display space; and

(e) displaying the elements in the space allocated to the corresponding cells.

Claim 18. The method of claim 17 wherein in step (b) said ModDSR values are determined by reducing the DSR value of each said element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds.

Claim 19. The method of claim 18 wherein the amount of reduction also depends on a measure of the space wastage which is inherent to a matrix format display.

Claim 20. The method of claim 17 wherein in step (d) the highest of said values corresponding to each column or to each row are used as a basis for allocating column widths or row heights, respectively.

Claim 21. The method of claim 17 wherein in step (d) said values obtained by using the ModDSR values depend on a measure of relative lopsidedness across columns and across rows.

Claim 22. A computer executable method for displaying elements of an information array within a predetermined two dimensional display space, wherein, the elements of the information array have corresponding cells arranged into columns or rows for displaying in the predetermined two dimensional display space and at least two of said elements include text, said method comprising the steps of:

(a) determining display space requirements (DSR) for displaying the elements;

(b) checking whether the predetermined two dimensional display space is adequate for displaying the information array elements in a matrix format and, if found to be inadequate, executing the following steps;

(c) allocating column widths or row heights in proportion to the total of the DSR values of the elements corresponding to the cells arranged into each corresponding column or row, respectively, such that the total width of all the columns or the total height of all the rows does not exceed the width and height, respectively, of the predetermined two dimensional display space;

(d) within each column or row, allocating height or width, respectively, to cells in proportion to the DSR values of the elements corresponding to the cells within each such column or row, respectively, such that the total height or width of all the cells does not exceed the height or width, respectively, of the predetermined two dimensional display space; and

(e) displaying the elements in the space allocated to the corresponding cells.

Claim 23. The method of claim 22 wherein step (b) includes:

(a) resolving the DSR values of the elements to their corresponding cell widths and cell heights;

(b) for each column, setting the column width equal to the largest cell width in that column;

(c) for each row, setting the row height equal to the largest cell height in that row;

(d) calculating the space required for matrix format display, by using the widths and heights determined in steps (b) and (c); and

(e) comparing the space required for matrix format display with the predetermined two dimensional display space to determine whether the information array elements can be displayed in a matrix format.

Claim 24. The method of claim 22 further including, using a colour or shading pattern in cells to make up for loss of alignment of cells across columns or across rows, respectively.

Claim 25. A computer system including a computer and programs for displaying elements of an information array within a predetermined two dimensional display space, wherein the predetermined two dimensional display space is divided into cells formed at intersections of columns and rows, the elements of the information array have corresponding cells for display, and at least two of said elements include text, said computer system comprising of:

(a) means for determining display space requirement (DSR) for displaying the elements;

(b) means for moderating the DSR value of at least one element to determine its moderated display space requirement (ModDSR) value, wherein said moderating means comprises:

(i) means for selecting an element whose DSR value is larger than the DSR value of at least one element in the column or row to which said element corresponds; and

(ii) means for reducing the DSR value of the selected element such that the amount of reduction depends on the difference between the DSR value of said element and a value representative of the DSR values of the elements corresponding to the column or row to which said element corresponds;

(c) means for allocating column widths and row heights, based on the ModDSR values or on values obtained by using the ModDSR values, such that the total width of all the columns and the total height of all the rows do not exceed the width and height, respectively, of the predetermined two dimensional display space; and

(d) means for displaying the elements in the space allocated to the corresponding cells.

Claim 26. The system of claim 25 further comprising at least one of the following:

(a) means for specifying acceptable extent of text abbreviation;

(b) means for specifying permitted font size range;

(c) means for selecting internal leading space reduction;

(d) means for selecting allocation of column widths or row heights as a first allocation;

(e) means for selecting font sizes for display in cells; or

(f) means for using abbreviated form of text elements for determining DSR values.

Claim 27. A computer-readable medium embodying the method in claim 1.

Claim 28. A compacted display format generated by employing the method in claim 1.

APPENDIX II. Evidence Appendix

NONE

Appendix III. Related Proceedings Appendix

NONE